

# **SOLAR PACK**

## **11<sup>th</sup> GRADE TEACHERS NEED MONEY**

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## DAY 1

### PRODUCT SUMMARY

The solar pack is a combination of a back pack and a solar energy cell. The cell being used is light weight but will provide enough energy to charge a device like a cell phone or I pad. These items are often carried by students in back packs. The back pack will contain the required outlets to charge the device through the use of solar energy.

Back packs are common on most educational campuses; this product will redefine how people use back packs. Instead of a device for carrying books and materials backpacks will not be viewed as portable recharging stations. Though they may not be that useful at night, people can still find a charge in any lighted area.

## DAY 2

### MATERIALS

Reference Sources: <http://www.madehow.com/Volume-1/Solar-Cell.html>

[http://www.metalprices.com/pubcharts/Public/Silicon\\_Price\\_Charts.asp?WeightSelect=KG&SizeSelect=M&ccs=1011&cid=0](http://www.metalprices.com/pubcharts/Public/Silicon_Price_Charts.asp?WeightSelect=KG&SizeSelect=M&ccs=1011&cid=0)

<http://tweetys.com/14gaugered100spool.aspx?gclid=CJjgwIGbhbACFQdeTAodlDRolg>

<http://www.fabrics.net/Nylon-Mesh-s/54.htm>

MATERIAL	AMOUNT NEEDED	COSTS
Silicon	1 kg per backpack	\$4.00
Titanium Dioxide	.5 kg per back pack	\$55.00
Copper Wires	1 meter	\$2.00
Nylon Material	2 square meter	\$15.00

ethylene vinyl acetate	.5 square meters	.50
Electrical Outlets	1	.50

#### GREEN ALTERNATIVES

[http://www.alibaba.com/trade/search?SearchText=recycled+silicon&IndexArea=product\\_en&fsb=y&CatId=4](http://www.alibaba.com/trade/search?SearchText=recycled+silicon&IndexArea=product_en&fsb=y&CatId=4)

<http://www.info.com/Copper%20Wire%20Prices%20Scrap?cb=27&cmp=4844&gclid=CPiFiPWihbACFUu4tgod7kRgkw>

<http://www.gemplers.com/burlap?cid=25GLHRT&mkwid=smNtSUFm3&pcrid=11091649945&gclid=CLuwm72jhbACFaVdTAodJGOcjw>

MATERIAL	GREEN ALTERNATIVE	COSTS
Silicon	Recycled Silicon	\$5.00
Titanium Dioxide	No Alternative	
Copper Wires	Recycled Copper Wire	\$1.00
Nylon Material	Burlap	\$5.00
ethylene vinyl acetate	Recycled silicon rubber	.43
Electrical Outlets	Recycled Outlets	.25

CONCLUSION: The use of recycled silicon and outlets does not help reduce the costs or improve the product. For this reason regular silicon and outlets will be used. The team will use a natural fiber like burlap to create the bag along with recycled silicon rubber instead of the vinyl acetate. These materials will reduce the cost and the environmental impact of creating this product.

#### DAY 3

**SCHEMATIC (create in Power Point, save as JPEG, paste here)**

Paste here:



## PRODUCTION METHOD

<http://www.prlog.org/10259913-10-steps-on-how-to-make-solar-panel.html>

<http://www.wikihow.com/Make-Solar-Cells>

<http://www.prlog.org/10270892-homemade-solar-cells-how-to-make-solar-cell.html>

STEP	MATERIALS	WHAT MUST HAPPEN
1. Base	Silicon, Rubber Plate	Silicon must be adhered to rubber plate by melting it and spreading it evenly on the plate.
2. Wires	Wires	Wires must attached to the silicon plate (soldered)
3. Protective Layer	Titanium Layer	Once Cool the titanium shield must be adhered to the silicon (chemical adhesive)
4. Material Shaping	Burlap	The backpack fabric must be cut to the proper sizes

5. Back Pack	Chemical Adhesives	The fabric will be glued together using heat and chemical agents
6. Solar Back Pack	Chemical Adhesives	The solar panel will be attached to the backpack with a chemical adhesive.
7. Connections	Outlet	The wires will be run through the backpack and soldered to the electrical outlet
8. Final Attachments	Chemical Adhesives	The outlet will be adhered to the backpack using a chemical adhesive

#### DAY 4:

#### GREEN ALTERNATIVES

STEP	GREEN METHOD	BENEFIT TO THE ENVIRONMENTS
1. Base	Solar Energy	
2. Wires	Solar Energy	
3. Protective Layer	Use a BIO ADHESIVE	
4. Material Shaping		
5. Back Pack		
6. Solar Back Pack		
7. Connections		
8. Final Attachments		

Create a slide show demonstrating each step and your products impact on the environment.

#### DAY 5

**SUMMARIZE THE DOCUMENT IN 3-4 PARAGRAPHS (One from each team member)**